UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/689,130	10/20/2003	Erik J. Shahoian	IMM151	3894

34300 7590 01/09/2008

PATENT DEPARTMENT (51851)
KILPATRICK STOCKTON LLP
1001 WEST FOURTH STREET
WINSTON-SALEM, NC 27101

EXAMINER	
HOLTON, STEVEN E	

ART UNIT	PAPER NUMBER
2629	

MAIL DATE	DELIVERY MODE
01/09/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/689,130
Filing Date: October 20, 2003
Appellant(s): SHAHOIAN ET AL.

Christopher Bosken
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 10/17/2007 appealing from the Office action mailed 5/17/2007.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

2002/0033795	Shahoian	3-2002
6128006	Rosenberg et al	10-2000

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shahoian et al. (USPgPub: 2002/0033795), hereinafter Shahoian in view of Rosenberg et al. (USPN: 6128006), hereinafter Rosenberg.

Regarding claims 1, 14, and 17 which are a device, associated method, and computer program associated with the method, Shahoian discloses a touch-sensitive input device (Fig. 1, element 16) configured to move in X and Y directions. Shahoian further discloses an actuator (Fig. 4, element 88) to provide haptic feedback to the touch-sensitive input device. Movement of a finger or instrument on the touchpad input device results in the creation of a signal to the actuators to provide haptic feedback to the touchpad device. However, Shahoian does not expressly disclose the actuator is disposed to produce a rotational force on the touch-sensitive input device.

Rosenberg discloses a wheel input device with rotational haptic feedback. Although, the mouse wheel is not a touch-sensitive device in the manner of a touchpad or similar, the haptic feedback is provided in response to a rotation of the mouse wheel, not a touch of the mouse wheel.

At the time of invention it would have been obvious to one skilled in the art to modify the teachings of Shahoian with the teachings of Rosenberg to produce a touchpad with rotational haptic feedback. The teachings of both references utilize haptic feedback as an opposing force to movement of an input device. A user of the touchpad described by Shahoian could move a finger in a circular path on the touchpad and at the same time programming could produce a feedback force made of a sum of X

and Y components that could simulate a feedback force in a direction associated with the direction of rotational movement. The teachings of Rosenberg are used to show that haptic feedback on a rotating body is well-known in the art. It would have been obvious to one skilled in the art that a touchpad described by Shahoian could be configured to move in a rotational manner through modification of the connection between the actuator and the touchpad. The teachings of Rosenberg provide types of rotational feedback that could be provided to any input device able to be in a rotating manner. The motivation for combining to the two references would be to alter a touchpad with haptic feedback as described by Shahoian to provide a different direction of haptic feedback to the touch-sensitive input device based on the expected inputs made to the input device.

Regarding claim 2, Shahoian discloses the input device as a touch-sensitive input device (Fig. 1, element 16).

Regarding claim 3, the shape of the touchpad, either as rectangular, circular, or some arbitrary shape would be a matter of design choice for one skilled in the art.

Regarding claims 4, 15 and 18, Rosenberg discloses generating rotational force within a limited range of motion (col. 21, lines 33-37). The Examiner notes that the hard stop force would produce a limited range of motion for the rotational force.

Regarding claims 5 and 6, Shahoian discloses using an actuator with a magnetic core and further names the actuator type as an "E-core" actuator (Figs. 15a and 15b; paragraph 159).

Regarding claim 7, Rosenberg discloses the use of a motor with belt drive to provide rotational haptic feedback (Fig. 7, elements 112 and 138 are actuator and belt; col. 15, line 64 – col. 16, line 20).

Regarding claim 8, Shahoian discloses providing stops to limit the movement of the input device (Fig. 16a, element 404; paragraph 169).

Regarding claim 9, Shahoian discloses an actuator using an eccentric rotation mass to provide haptic feedback (paragraph 92, lines 4-6). The Examiner notes that if the actuator described in claim 9 is providing "a rotational force on the touch-sensitive input device" as recited in claim 1, then the teachings of Shahoian would be read on the first claim directly as the actuator to provide a rotational force are used to provide a vibration as discussed in the touch input system of Shahoian and this vibration in the claims is regarded as a rotational force on the touchpad.

Regarding claim 10, Regarding claim 10, Shahoian discloses providing a flexure driven actuator with motor (paragraph 91).

Regarding claim 11, the Examiner states that the use of a flexure of brass would be a design choice for one skilled in the art. The flexure would be made of a suitable material to provide the necessary motion, strength, resiliency, or other properties needed to operate the device. The type of material chosen would be a design choice option.

Regarding claim 12, Shahoian discloses having the actuator is grounded to the housing (Fig. 9, element 278, paragraph 123).

Regarding claim 13, Shahoian discloses a processor to receive output signals and generate signals to produce the feedback forces (Fig. 4, elements 110 and 116). Rosenberg also discloses a processor to receive outputs and produce actuator inputs (col. 8, lines 15-27).

Regarding claims 16 and 19, Rosenberg discloses generating pop sensation to the touch-sensitive input device (col. 18, lines 60 – 64).

(10) Response to Argument

In response to Issue 1:

The rejection of claims 1-19 under 35 U.S.C. 103(a) as being unpatentable over Shahoian in view of Rosenberg should be maintained.

Shahoian discloses a touchpad input device connected to an actuator. The touchpad is configured to move in both x and y directions within the plane of the touchpad to provide haptic (force) feedback to a user of the input device. Shahoian teaches that rotary actuators can be used to produce the linear movement of the touchpad (Figs. 10 and 14). The rotary movement of the actuators is converted into linear movement by way of the linkages connecting the touchpad to the rotary actuator.

A rotational movement is the combination of two planar linear forces acting around a pivot point. It would be obvious to one of ordinary skill in the art that an object that is free to move in any linear direction within a plane could be modified to rotate within the same plane by defining a pivot point. By holding one corner of the touchpad

of Shahoian in a fixed location, the linear forces from the actuators would force the touchpad to rotate around the fixed location.

Another way of modifying the Shahoian system to provide rotary feedback would be to place the rotary actuator beneath the touchpad and connect the touchpad using an axel-like connection instead of the linear linkage. Such a direct connection between the rotating actuator and the touchpad would result in the touchpad rotating in direct response to movement of the actuator. Such a direct connection between a rotating actuator and the touchpad to produce rotational movement would have been obvious to one of ordinary skill in the art based on the fundamental principles of mechanics.

Thus, it would have been obvious to one of ordinary skill in the art that the touchpad capable of free movement within a plane and provided with linear haptic feedback as described by Shahoian could be easily modified to provide feedback in a rotary direction rather than a linear direction.

Rosenberg teaches known methods of connecting a movable input device to a rotating actuator to provide rotational haptic (force) feedback to the movable body. Rosenberg shows the use of a direct connection along an axle between the rotating body and the actuator (Figs. 5 and 6) as well as the use of a driving belt to connect the actuator to the movable knob (Figs. 7 and 8, element 138). These types of mechanical connections from a rotating actuator to a movable body are easily understood and could obviously be applied to connecting a rotary actuator to any movable body including a touchpad or other type of input device. Other types of input devices that use rotary feedback are shown within the Information Disclosure Statement filed by the Applicant

on 3/10/2004; these include steering wheels, rotary control knobs, throttle controls, joysticks and other objects connected to computer systems. One of ordinary skill in the art of haptic and force feedback would recognize that rotary haptic feedback is a well-known technique for providing feedback based on the properties of a movable body. Therefore, it would have been obvious that an object freely movable within a plane could be made to rotate or move linearly within the plane based on the type of connection to a moving actuator.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Steven E. Holton

Conferees:

Amr Awad

AMR A. AWAD
SUPERVISORY PATENT EXAMINER

Amare Mengistu

AMARE MENGISTU
SUPERVISORY PATENT EXAMINER